

DEPARTMENT OF COMMERCE

BUREAU OF STANDARDS

S. W. STRATTON, Director

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RULES AND REGULATIONS PROMULGATED UNDER AUTHORITY OF THE FEDERAL STANDARD-BARREL LAW

In accordance with the provisions of section 3 of the act to fix the standard barrel for fruits, vegetables, and other dry commodities (38 Stat., ch. 158, p. 1186, 63d Cong.), approved March 4, 1915 (see Appendix), there are hereby promulgated rules and regulations, made by the Director of the Bureau of Standards and approved by the Secretary of Commerce.

PARAGRAPH 1. (a) The capacities of the standard barrel for fruits, vegetables, and other dry commodities,¹ other than cranberries, and its subdivisions, are as follows:

Size	Cubic inches	Bushels ^a	Quarts ^a
Barrel.....	7056	3. 281	105
$\frac{3}{4}$ barrel.....	5292	2. 461	$78\frac{3}{4}$
$\frac{1}{2}$ barrel.....	3528	1. 641	$52\frac{1}{2}$
$\frac{1}{3}$ barrel.....	2352	1. 094	35

^a Struck measure.

¹ Lime is not included within the purview of the law or of these rules and regulations, since a more recent act (Public—No. 228—64th Cong., approved Aug. 23, 1916) has established standard barrels especially for lime, upon a weight basis.

(b) The capacities of the standard cranberry barrel and its subdivisions are as follows:

Size	Cubic inches	Bushels ^a	Quarts ^a
Cranberry barrel.....	5826	2. 709	86 $\frac{15}{84}$
$\frac{3}{4}$ cranberry barrel	4369. 5	2. 032	65 $\frac{1}{84}$
$\frac{1}{2}$ cranberry barrel	2913	1. 355	43 $\frac{11}{32}$
$\frac{1}{3}$ cranberry barrel	1942	0. 903	28 $\frac{19}{32}$

^a Struck measure.

PAR. 2. (a) Any barrel having the dimensions specified for a standard barrel for fruits, vegetables, and other dry commodities other than cranberries, in section 1 of the standard-barrel law, or any barrel or a subdivision thereof having the contents specified in section 1 of the standard-barrel law and in paragraph 1 (a) of these rules and regulations, regardless of its form or dimensions, is a legal standard barrel for fruits, vegetables, or other dry commodities other than cranberries, or a legal subdivision thereof. No other barrel or subdivision in barrel form is a legal container for fruits, vegetables, or other dry commodities other than cranberries.

(b) Any barrel having the dimensions specified for a standard barrel for cranberries in section 1 of the standard-barrel law, or any subdivision thereof having the contents specified in paragraph 1 (b) of these rules and regulations, regardless of its form or dimensions, is a legal standard barrel for cranberries or a legal subdivision thereof. No other barrel or subdivision in barrel form is a legal container for cranberries.

PAR. 3. The tolerance established hereafter for the dimension specified as "distance between heads" shall be applied as follows on the various types of barrels in use:

(a) When a barrel or subdivision thereof has two heads, the tolerance shall be applied to the distance between the inside surfaces of the heads and perpendicular to them.

(b) When a barrel or subdivision thereof has but one head and a croze ring or other means for the insertion of a head, such as an inside hoop, etc., at the opposite end, the tolerance shall be applied to the distance from the inside surface of the bottom head and perpendicular to it to the inside edge of the croze ring, or to a point where the inside surface of a head would come were such head inserted in the barrel.

(c) When a barrel or subdivision thereof has but one head and no croze ring or other means for the insertion of a head, such as an inside hoop, etc., at the opposite end, the tolerance shall be applied to the distance from the inside surface of the bottom head and perpendicular to it to a point $1\frac{1}{8}$ inches from the opposite end of the staves in the case of a barrel or a $\frac{3}{4}$ barrel, and to a point 1 inch or $\frac{7}{8}$ inch from the opposite end of the staves in the case of the $\frac{1}{2}$ barrel and $\frac{1}{3}$ barrel, respectively. When a barrel or subdivision thereof has been manufactured with but one head and no croze ring or other means for the insertion of a head at the opposite end, and it is desired to insert a second head, the croze ring shall be so cut that the inside edge shall not be more than $1\frac{1}{8}$ inches from the end of the staves in the case of a barrel or $\frac{3}{4}$ barrel or not more than 1 inch or $\frac{7}{8}$ inch from the end of the staves in the case of the $\frac{1}{2}$ barrel and $\frac{1}{3}$ barrel, respectively, or the other means shall be so adjusted that the inside surface of the head when inserted shall not exceed these distances from the end of the staves.

PAR. 4. The tolerance established hereafter for the dimension specified as "diameter of head" shall be applied to the diameter of the head over all, including the part which fits into the croze ring of the completed barrel.

The tolerance established hereafter for the dimension specified as "effective diameter of head" shall be applied as follows on the various types of barrels and subdivisions in use:

(a) When a barrel or subdivision thereof has two heads, the tolerance shall be applied to the mean of the average diameters from inside to inside of staves at the inner edges of the heads.

(b) When a barrel or subdivision thereof has but one head and a croze ring or other means for the insertion of a head at the opposite end, the tolerance shall be applied to the mean of the average diameters, one taken from inside to inside of staves at the inner edge of the head, the other from inside to inside of staves at the inner edge of the croze ring, or from inside to inside of staves at a point where the inside surface of a head would come were such head inserted in the barrel.

(c) When a barrel or subdivision thereof has but one head and no croze ring or other means for the insertion of a head at the opposite end, the tolerance shall be applied to the mean of the average diameters, one taken from inside to inside of staves at the inner edge of the head, the other taken from inside to inside of

staves at a point $1\frac{1}{8}$ inches from the end of the staves in the case of a barrel or $\frac{3}{4}$ barrel, or at a point 1 inch or $\frac{7}{8}$ inch from the end of the staves in the case of a $\frac{1}{2}$ barrel or $\frac{1}{3}$ barrel, respectively.

The standard allowance for depth of croze ring shall be $\frac{3}{16}$ inch. Therefore, the standard "effective diameter of head" in the case of the standard barrel is $16\frac{3}{4}$ inches and in the case of the standard cranberry barrel is $15\frac{7}{8}$ inches.

PAR. 5. Whenever in these rules and regulations the error on a dimension is mentioned, this error shall be determined by taking the difference between the actual measured dimension and the standard dimension. The error is an error in excess and is to be preceded by a plus sign when the measured dimension is greater than the standard dimension. The error is an error in deficiency and is to be preceded by a minus sign when the measured dimension is less than the standard dimension.

(a) The standard dimensions of a barrel for fruits, vegetables, and other dry commodities other than cranberries, and of a barrel for cranberries, with which the actual measured dimensions are to be compared, are as follows:

Dimensions	Barrel for fruits, vegetables, and other dry commodities other than cranberries	Barrel for cranberries
	Inches	Inches
Diameter of head.....	$17\frac{1}{8}$	$16\frac{1}{4}$
Effective diameter of head (see par. 4).....	$16\frac{3}{4}$	$15\frac{7}{8}$
Distance between heads.....	26	$25\frac{1}{4}$
Circumference of bulge, outside measurement.....	64	$58\frac{1}{2}$
Length of stave.....	$28\frac{1}{2}$	$28\frac{1}{2}$

(b) In the case of all subdivisions of the barrel for fruits, vegetables, and other dry commodities other than cranberries, and all subdivisions of the barrel for cranberries, the following dimensions are hereby standardized for the purpose of the application of tolerances, and the actual measured dimensions are to be compared with these:

Subdivisions of Barrel for Fruits, Vegetables, and Other Dry Commodities other than Cranberries

Dimensions	$\frac{3}{4}$ barrel	$\frac{1}{2}$ barrel	$\frac{1}{3}$ barrel
	Inches	Inches	Inches
Effective diameter of head (see par. 4).....	15 $\frac{1}{4}$	13 $\frac{3}{8}$	11 $\frac{5}{8}$
Distance between heads.....	23 $\frac{1}{2}$	20 $\frac{1}{2}$	18
Circumference of bulge, outside measurement.....	58 $\frac{1}{2}$	51 $\frac{1}{2}$	45 $\frac{1}{4}$

Subdivisions of Barrel for Cranberries

Dimensions	$\frac{3}{4}$ barrel	$\frac{1}{2}$ barrel	$\frac{1}{3}$ barrel
	Inches	Inches	Inches
Effective diameter of head (see par. 4).....	14 $\frac{3}{8}$	12 $\frac{5}{8}$	11
Distance between heads.....	23	20	17 $\frac{1}{2}$
Circumference of bulge, outside measurement.....	53 $\frac{3}{8}$	47	41 $\frac{3}{8}$

PAR. 6. For the purpose of the application of tolerances, barrels for fruits, vegetables, and other dry commodities other than cranberries, are hereby divided into two classes as follows:

Class 1 shall include (a) all barrels no dimension of which is in error by more than the following amounts, and (b) all barrels one or more of the dimensions of which are in error by more than the following amounts, and which in addition have no dimension in error in the opposite direction:

	Error, inches
Effective diameter of head.....	$\frac{1}{4}$
Distance between heads.....	$\frac{1}{4}$
Circumference of bulge, outside measurement.....	1 $\frac{1}{2}$

Class 2 shall include all barrels at least one dimension of which is in error by more than the amounts given above, but which in addition have at least one dimension in error in the opposite direction. (This class includes all barrels mentioned in section 1 of the law in the proviso reading: "Provided, That any barrel of a different form having a capacity of seven thousand and fifty-six cubic inches shall be a standard barrel.")

PAR. 7. (a) The tolerances to be allowed in excess or in deficiency on the dimensions of all barrels of class 1 shall be as follows:

	Tolerance, inches
Diameter of head.....	$\frac{1}{4}$
Effective diameter of head.....	$\frac{1}{4}$
Distance between heads.....	$\frac{1}{4}$
Circumference of bulge, outside measurement.....	1 $\frac{1}{2}$
Length of stave.....	$\frac{1}{2}$

If no dimension of a barrel of class 1 is in error by more than the tolerance given above, then the barrel is within the tolerance allowed.

If one or more of the dimensions of a barrel of class 1 is in error by more than the tolerance given above, then the barrel is not within the tolerance allowed.

(b) The tolerance to be allowed in excess or in deficiency on all barrels of class 2 shall be $1\frac{1}{2}$ inches (1.5 inches), and this tolerance is to be applied to the result obtained by the application of the following rule:

Having determined the errors of each dimension and given to each its proper sign (see par. 4), add the errors on the effective diameter of head and the distance between heads algebraically and multiply the result by 1.67 (or $5/3$). Then add this result to the error on the circumference of bulge algebraically. If the result obtained is not greater than the tolerance given above, then the barrel is within the tolerance allowed; if the result is greater than this tolerance, then the barrel is not within the tolerance allowed.

NOTE.—To find the algebraic sum of a number of quantities having different signs, first add all those having one sign; then add all those having the opposite sign; then subtract the smaller sum from the larger, giving this result the sign of the larger quantity.

(c) The tolerance to be allowed in excess or in deficiency on the dimensions of all barrels for cranberries shall be as follows:

	Tolerance, inches
Diameter of head.....	$\frac{1}{4}$
Effective diameter of head.....	$\frac{1}{4}$
Distance between heads.....	$\frac{1}{4}$
Circumference of bulge, outside measurement.....	$1\frac{3}{8}$
Length of stave.....	$\frac{1}{2}$

If no dimension of a barrel for cranberries is in error by more than the tolerance given above, then the barrel is within the tolerance allowed.

If one or more of the dimensions of a barrel for cranberries is in error by more than the tolerance given above, then the barrel is not within the tolerance allowed.

(d) The tolerances to be allowed in excess or in deficiency on all subdivisions of the standard barrel for fruits, vegetables, and other dry commodities other than cranberries, and on all subdivisions of the standard barrel for cranberries, shall be the values given in the following table, and these tolerances are to be applied to the result obtained by the application of the following rule:

Having determined the errors on each dimension and given to each its proper sign (see par. 5), add the errors on the effective diameter of head and the distance between heads algebraically and multiply the result by 1.67 (or $5/3$). Then add this result to the error on the circumference of bulge algebraically. If the result obtained is not greater than the tolerance given in the following table for the proper subdivision, then the barrel is within the tolerance allowed; if the result is greater than this tolerance, then the barrel is not within the tolerance allowed.

Size of subdivision	Tolerance	
	For fruits, vegetables, and other dry commodities	For cranberries
	Inches	Inches
$\frac{3}{4}$ barrel.....	$1\frac{3}{8}$ (1.375)	$1\frac{1}{4}$ (1.25)
$\frac{1}{2}$ barrel.....	$1\frac{1}{4}$ (1.25)	$1\frac{1}{8}$ (1.125)
$\frac{1}{3}$ barrel.....	$1\frac{1}{8}$ (1.125)	1 (1.00)

S. W. STRATTON,
Director.

Approved:

WILLIAM C. REDFIELD,
Secretary.

WASHINGTON, June 30, 1917.

NOTE.—The above rules and regulations refer entirely to individual barrels, and no separate tolerance has been placed on the average content of a number of barrels taken at random from a shipment. It is not believed that barrels can be so made as to take advantage of the tolerances, and, of course, no attempt should be made to do this. It is, therefore, expected that as many barrels will be above as below the standard capacity. Investigations will be conducted during the present shipping season for the purpose of ascertaining whether this expectation is fulfilled. If it is not, then additional regulations will be issued in the future governing this matter.

APPENDIX.

[38 Stat., ch. 158, p. 1186; 63d Cong.]

AN ACT To fix the standard barrel for fruits, vegetables, and other dry commodities.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the standard barrel for fruits, vegetables, and other dry commodities other than cranberries shall be of the following dimensions when measured without distention of its parts: Length of stave, twenty-eight and one-half inches; diameter of heads, seventeen and one-eighth inches; distance between heads, twenty-six inches; circumference of bilge, sixty-four inches, outside measurement; and the thickness of staves not greater than four-tenths of an inch: *Provided*, That any barrel of a different form having a capacity of seven thousand and fifty-six cubic inches shall be a standard barrel. The standard barrel for cranberries shall be of the following dimensions when measured without distention of its parts: Length of staves, twenty-eight and one-half inches; diameter of head, sixteen and one-fourth inches; distance between heads, twenty-five and one-fourth inches; circumference of bulge, fifty-eight and one-half inches, outside measurement; and the thickness of staves not greater than four-tenths of an inch.

SEC. 2. That it shall be unlawful to sell, offer, or expose for sale in any State; Territory, or the District of Columbia, or to ship from any State, Territory, or the District of Columbia to any other State, Territory, or the District of Columbia or to a foreign country, a barrel containing fruits or vegetables or any other dry commodity of less capacity than the standard barrels defined in the first section of this Act, or subdivisions thereof known as the third, half, and three-quarters barrel, and any person guilty of a willful violation of any of the provisions of this Act shall be deemed guilty of a misdemeanor and be liable to a fine not to exceed \$500, or imprisonment not to exceed six months, in the court of the United States having jurisdiction: *Provided, however*, That no barrel shall be deemed below standard within the meaning of this Act when shipped to any foreign country and constructed according to the specifications or directions of the foreign purchaser if not constructed in conflict with the laws of the foreign country to which the same is intended to be shipped.

SEC. 3. That reasonable variations shall be permitted and tolerance shall be established by rules and regulations made by the Director of the Bureau of Standards and approved by the Secretary of Commerce. Prosecutions for offenses under this Act may be begun upon complaint of local sealers of weights and measures or other officers of the several States and Territories appointed to enforce the laws of the said States or Territories, respectively, relating to weights and measures: *Provided, however*, That nothing in this Act shall apply to barrels used in packing or shipping commodities sold exclusively by weight or numerical count.

SEC. 4. That this Act shall be in force and effect from and after the first day of July, nineteen hundred and sixteen.

Approved, March 4, 1915.

